

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Takashi YASHIKI

SERIAL NO: New Application

GAU:

FILED: Herewith

EXAMINER:

FOR: PURE TITANIUM BUILDING MATERIAL AND METHOD OF MANUFACTURING THE SAME

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

- ☒ The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☐ Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the patent(s), together with a copy of the claims and drawings of the pending application(s) is attached along with PTO 1449.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- ☐ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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**STATEMENT OF RELEVANCY**

**Reference AO (10-8234) of Form PTO-1449:**

This reference is explained in the specification.

**PROBLEM TO BE SOLVED:** To obtain outdoor titanium in which the generation of discoloration is prevented over a long period and free from the need of maintenance by imparting surface roughness in which the center line average roughness is prescribed and oxidized coating on the surface in which thickness is specified to outdoor titanium or the like.

**SOLUTION:** The surface roughness of an outdoor titanium or titanium alloy material is regulated to less than or equal to  $3\mu\text{m}$ , preferably to less than or equal to  $1.5\mu\text{m}$  by the center line average roughness  $R_a$ , and the thickness of oxidized coating on the surface is regulated to greater than or equal to  $20\text{\AA}$ ; preferably, to greater than or equal to  $40\text{\AA}$ . Furthermore, the regulation of the surface roughness is executed by regulating the surface roughness of rolling rolls, rolling loads and the velocity thereof, and for the regulation of the thickness of the oxidized coating, an oxidation treating method by heat treatment and an anodic oxidation treating method of forming oxidized coating by flowing electric current to titanium in a solution are adopted. In this way, the outdoor titanium or titanium alloy material excellent in discoloration resistance can be obtained.

**Reference AP (3255610) of Form PTO-1449:**

This reference is explained in the specification.

**PROBLEM TO BE SOLVED:** To reduce the aging discoloration in a material and to realize perfect maintenance-free in the case of being used as an exterior material for building by making an oxidized film whose thickness is specified value or below exist on the surface of a base, adjusting the content of C in this oxidized film to specified value or below and adjusting the content of C in the surface layer part of the base below the oxidized film to specified value or below.

**SOLUTION:** This titanium or titanium alloy material is the one in which an oxidized film having less than or equal to  $100\text{\AA}$ ; thickness is present on the surface of a base, the content of C in this oxidized film is less than or equal to 30 atomic %, and the content of C in the surface layer part of the base below the oxidized film is less than or equal to 30 atomic %. For producing these titanium or titanium alloy material, a cold rolled stock is annealed at  $600$  to  $850^\circ\text{C}$  for 0.5 to 20 min in an atmospheric ambience, is thereafter subjected to salt immersion and is furthermore subjected to pickling so that the reduction loss of the sheet thickness thereby becomes greater than or equal to  $0.1\mu$ . Or, the cold rolled stock is subjected to vacuum annealing, is thereafter subjected to skinpass rolling or dull skinpass rolling and is moreover subjected to pickling.

**Reference AQ (2001-348634) of Form PTO-1449:**

This reference is explained in the specification.

**PROBLEM TO BE SOLVED:** To produce a titanium sheet hardly to be discolored even when used in the environment to be exposed to light such as outdoor.

**SOLUTION:** In this titanium sheet obtained by subjecting a titanium cold rolled sheet to bright annealing or a titanium sheet obtained by annealing a titanium cold rolled sheet in an oxidizing atmosphere, subjecting the same to descaling and thereafter performing pickling finish, the content of carbon in a carbon concentrated layer in the surface layer of the titanium sheet is less than or equal to 150 mg/m<sup>2</sup>.

Form PTO 1449  
(Modified)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY DOCKET NO.  
250268US0SERIAL NO.  
New Application

## LIST OF REFERENCES CITED BY APPLICANT

APPLICANT  
Takashi YASHIKIFILING DATE  
Herewith

GROUP

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION	
					YES	NO
	AO	10-8234	01/13/98	Japan		X
	AP	3255610	11/30/01	Japan		X
	AQ	2001-348634	12/18/01	Japan		X
	AR					
	AS					
	AT					
	AU					
	AV					

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)

	AW	
	AX	
	AY	
	AZ	<input type="checkbox"/> Additional References sheet(s) attached

Examiner

Date Considered

\*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.